MULTIPLEXED SATURATION SPECTROSCOPY WITH ELECTRO-OPTIC FREQUENCY COMBS

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Electro-optic frequency combs recently have been applied to a wide range of physical and spectroscopic measurements because of attributes including, simplicity, robustness, flexibility, phase coherence, and high spectral power density. As an illustrative example, I will focus upon multiplexed saturation spectroscopy of atomic potassium (^{39}K) using ultra-high resolution frequency combs which contain up to a million individual teeth with spacings between 2 kHz and 2 MHz. Through the use of a self-heterodyne detection method, we have been able to simultaneously observe phenomena such as hole burning, hyperfine pumping, and electromagnetically induced transparency. I will discuss these measurements as well as future applications in molecular and atomic spectroscopy.